



**METRO STUDY
SUMMARY REPORT**

SACRAMENTO METROPOLITAN AREA TRANSPORTATION STUDY

SACRAMENTO AREA COUNCIL OF GOVERNMENTS

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SUMMARY STATEMENT

Where will we be in the year 2010? In most respects the forecast for the Sacramento region could not be brighter. The Sacramento area is recognized as one of California and the nation's most desirable places to live. The affordable housing, growing economy, mild climate, and abundance of educational, employment, and recreational opportunities found here have made Sacramento extremely attractive. Although traffic congestion in Sacramento may still seem light when compared to the gridlock found in other major cities, the region's popularity and resulting growth is placing tremendous pressures on the existing transportation system.

The Metro Study clearly illustrates the potential impacts of current land development patterns in the region. While many people are now moving to Sacramento to enjoy the high quality of life, the projected growth has the potential to cause significant traffic problems in the near future. The region's bus and rail system, highways and bridges-- portions of which are already crowded beyond capacity during commute hours--will be called upon to accommodate hundreds of thousands of new commuters.

As has been seen in other areas of the state, traffic congestion can be a threat to economic prosperity, an impedance to further growth and development, and a major contributor to increasingly poor air quality. In general, the problems associated with traffic congestion are often perceived as causing a decline in the overall quality of life. With appropriate land use and transportation planning, Sacramento can avoid many of these problems and maintain the attractive qualities that have drawn so much attention.

In 1986, Sacramento regional policy makers asked SACOG planners to develop a list of transportation improvement projects that would be needed to accommodate traffic projected for the year 2010. After two years of work, the policy makers have approved the Sacramento Metropolitan Area Transportation Study's comprehensive recommendation.

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The Metro Study served as a unique forum for the region's planners, engineers and elected officials to coordinate a study that addresses local and regional needs and concerns. By working in this forum, it became clear that a list of transportation improvements is not a complete response to concerns about the region's congestion. Environmental issues--in particular air quality--and impacts of land use development patterns on congestion must be addressed.

As summarized in this report, SACOG's recommendations to the region are designed to ensure that transportation impacts on air quality are further examined, that alternative land use development patterns are explored as a means of reducing travel demand, and to ensure that citizens in the next century will be able to travel easily and comfortably.



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Figure 1

STUDY AREA



DESCRIPTION OF STUDY

The purpose of this study has been to develop a list of priorities for transportation system improvements needed to meet travel demand projected for the year 2010 based on current land use plans. The study's recommendations are designed to assist local officials in transportation planning during the next several years.

The study focused on alternative improvements to an established base network for the year 2010. This base scenario was developed using socioeconomic projections based on existing general plans and transportation improvements that are currently assured of funding. From this base scenario, SACOG used a computer model to analyze different transportation system alternatives. The model calculates various traffic conditions for the year 2010; these were used to help select the most effective transportation improvements. Development of Demonstration Scenarios enabled SACOG to illustrate potential impacts of altering land use development patterns. The resulting recommendations are comprehensive, covering such issues as roadway and transit facilities needs, air quality, and land use as it effects transportation.

Public participation was encouraged throughout the study. There were four public forums during the process. These forums played a major role in shaping the final study recommendations. Public comment indicated an overwhelming support for the region taking a cautious approach to new freeway construction. Many people also favor more detailed examination of land use strategies. At the same time, however, concern was also expressed for preserving right-of-way for possible future transportation facilities.

Members from the concerned jurisdictions and agencies formed both a Technical and a Policy Advisory Committee. The Technical Advisory Committee was responsible for recommending transportation system alternatives, facilitating data collection, and providing detailed technical review. The Policy Advisory Committee was responsible for representing the public interests, ensuring that the technical analysis addressed policy issues, and making recommendations to the SACOG Board of Directors.

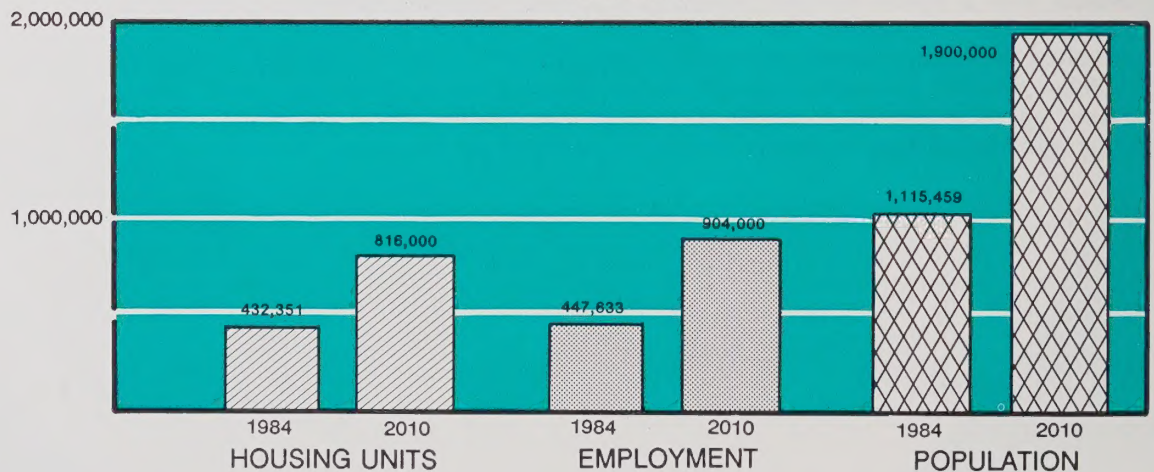
SEVERE CONGESTION FORECASTED REGIONWIDE

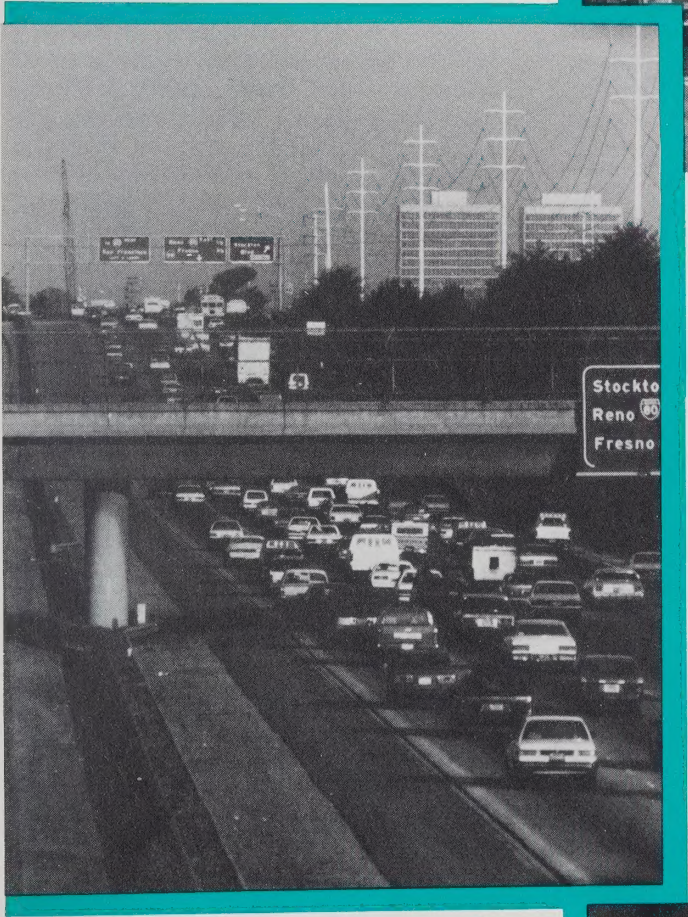
Land use projections for the year 2010 show a dramatic increase in population and employment, with most of the growth focused in low-density suburban developments. Given these development patterns in the region and assuming only those transportation improvements that are currently assured of funding, more than half of the region's freeways are projected to be severely congested during commute hours. In this scenario, the severe congestion now familiar to motorists at bridge crossings and near the major regional malls will spread throughout the metro area. The scenario results in 49 million vehicle miles traveled per day and 100,000 vehicle hours of delay in the busiest commute hour. When compared to estimates for 1984 of 22 million vehicle miles traveled daily and only 20,000 vehicle hours of delay, the magnitude of change is clear.

This 2010 base case scenario illustrates a pessimistic view of the future. The Sacramento County sales tax will provide funding for some light rail extensions, bus service expansions, and bridge and highway widenings that have not been assumed here since final project decisions have yet to be made. The scenario also assumes no change in individual travel behavior, though local and regional air quality plans are expected to propose measures to reduce the number of vehicle trips. If the Metro Study's recommendations are not carried out, however, this pessimistic forecast could become our future.

Figure 2

POPULATION, EMPLOYMENT, AND HOUSING GROWTH TRENDS 1984-2010





SOLUTIONS TO THE TRANSPORTATION PROBLEM

EXPANDING & IMPROVING THE SYSTEM, AND CHANGING TRAVEL BEHAVIOR

There are two approaches to reducing traffic congestion: expanding the transit and roadway facilities, or reducing vehicle travel. The Metro Study was designed to address expanded transit and roadway facilities needed to meet the needs of the population projected for 2010. In order to develop a list of projects that provides the greatest amount of support for projected travel needs, the Metro Study analyzed six alternative transportation scenarios. The alternatives were derived from a long list of possible transportation improvements envisioned for the year 2010. The list included:

- **Five light rail transit extensions:**
 - I-80 corridor to Antelope
 - Route 50 corridor to Hazel
 - North from downtown to North Natomas
 - West to West Sacramento
 - South to Meadowview and Calvine Roads
- **Two new major freeways:**
 - Route 102, parallel to I-80 between I-5 and Auburn
 - Route 65/148, connecting Routes 5, 99, 50 and 80 at approximately Elk Grove, Folsom, and Roseville.
- **Additional bridges across the American River**
 - Between Watt and Sunrise
 - At Truxel Road
 - In Folsom, at Auburn/Folsom Road and at Oak Avenue Parkway
- **Extensive list of freeway and surface street improvements**

Each alternative was built around a particular emphasis; as a group, the alternatives were designed to enhance comparisons of project effectiveness. In addition to system improvements, a reduction of vehicle trips through the use of transportation control measures (TCMs) was assumed in each of the alternatives.

The alternatives provided varying degrees of relief to the congestion projected for 2010. Alternative One is based on the expansion of five Light Rail Transit (LRT) lines, implementation of an extensive TCM program and a comprehensive package of bus system improvements. It provides significant relief across the region, particularly in terms of daily vehicle miles traveled and the number of hours vehicles are delayed during the commute.

Three LRT extensions, a moderate TCM program, and Route 65/148 comprise Alternative Two. The third Alternative differs by focusing on Route 102 as the primary roadway project. Both Alternatives Two and Three were relatively ineffective in relieving regional congestion. Alternative Four is essentially a combination of Two and Three. It provides fairly significant relief; however, the overall impact appears limited by the lack of expanded transit and the moderate TCM program.

The impacts of limiting new transit to just three light rail extensions, and foregoing new freeways were examined in Alternative Five. As may be expected, this approach provided minimal congestion relief.

Finally, a combination of five LRT lines, a comprehensive package of bus system improvements, an extensive TCM program and Routes 102 and 65/148 was developed as Alternative Six. This alternative provided the greatest amount of commute relief, and--due to the expanded transit facilities and TCM program--lowered the number of daily vehicle miles traveled from 49 million to 45 million.

Although each alternative provided relief in varying degrees, it is clear that no combination of transportation improvements will eliminate the congestion projected for year 2010. Analysis of Alternative Six, which provides the greatest amount of relief, shows the daily vehicle miles traveled and the vehicle hours of delay during the commute hour nearly doubling current levels.

MINIMIZING CONGESTION BY CHANGING LAND USE DEVELOPMENT PATTERNS

One of Sacramento's attractive features is the relatively affordable housing market. Many people are moving to Sacramento where they are able to enjoy the single family home that is often unaffordable in other parts of the state. Due in part to relatively low land prices, much of the development projected for the future will continue to be in lower-density, single-family housing developments that many families desire. From an environmental perspective, a negative component of this lifestyle is the reliance on the automobile. Traditional suburban development is difficult and expensive to serve by transit, and most persons are forced to use their car for all travel.

The three land use scenarios included in the study illustrate the effects that varying land use development patterns can have on a region's traffic congestion. Nodes of mixed-density housing and commerce were located in areas of the region that had access to both freeways and transit. Although this exercise was extremely rough, it clearly showed that developing housing and commerce within close proximity to each other and with access to both freeways and transit provides people with greater travel options. The ability to conveniently walk, bicycle or take transit instead of using an automobile reduces the number of cars on the road, relieving the region's congestion. Reducing reliance on the automobile for travel can assist in reducing air quality problems.





ISSUES AND RECOMMENDATIONS

The following findings and recommendations address many of the issues local policy makers must consider when planning for our transportation needs. These recommendations approved by the SACOG Board of Directors reflect the diverse issues of a region which includes both urban areas and agricultural land.

Figure 3

NITROGEN OXIDES (NO_x) EMISSION TRENDS
(AVERAGE ANNUAL DAY)
SACRAMENTO AIR QUALITY MAINTENANCE AREA
1980-2010

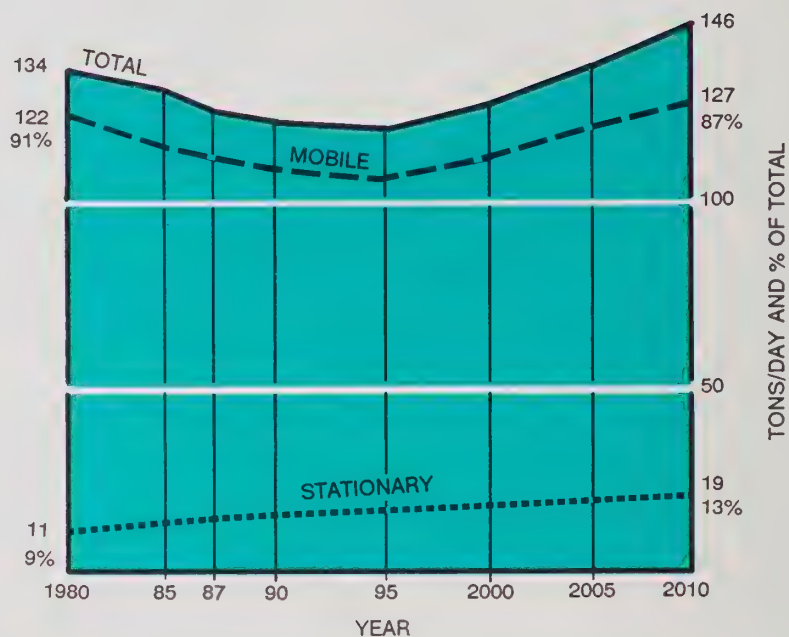
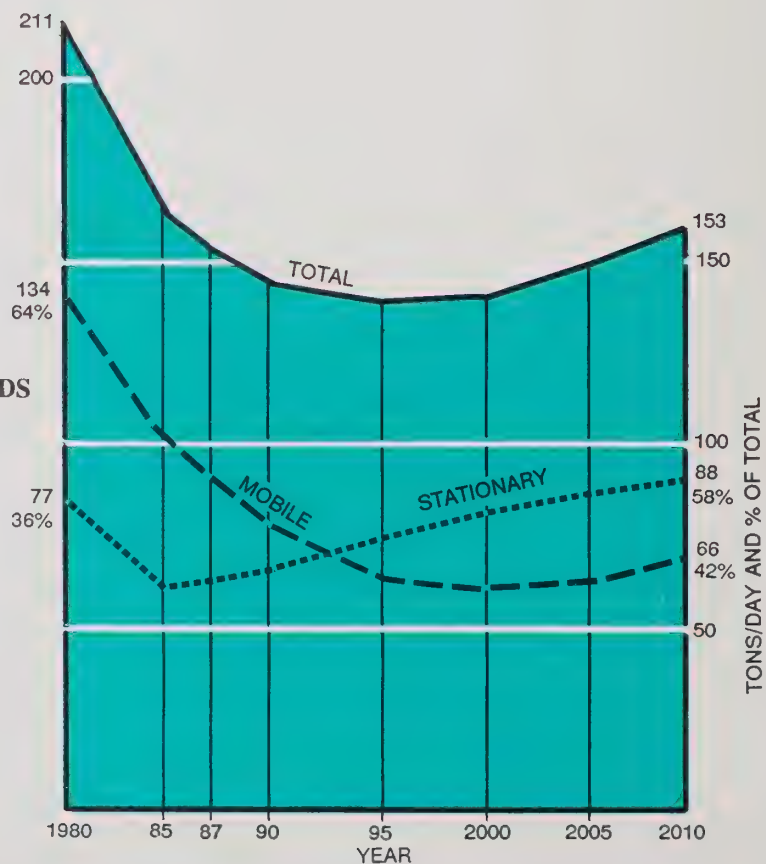


Figure 4

REACTIVE ORGANIC GAS (ROG) EMISSION TRENDS
(AVERAGE ANNUAL DAY)
SACRAMENTO AIR QUALITY MAINTENANCE AREA
1980-2010



1/Totals may not add due to rounding.
Source: Air Resources Board Technical Support Division - Preliminary data subject to revision
EMFAC 7D/BURDEN 7A - Average Annual Daily Emissions

AIR QUALITY ANALYSIS

The Metro Study includes an analysis of the relative impacts of the base case and the alternatives on air pollutant emissions. In addition, the Metro Study analysis provides information on some general indicators of air quality, i.e., VMT, total daily vehicle trips, and lane miles at LOS F. As expected, differences in the air quality impacts of Metro Study alternatives are not large. All scenarios, including the 2010 Base, show a reduction in ozone precursors over those from 1984. However, most of the reductions in ozone precursor emissions have taken place in the last five years (1984-1989) through improvements in the State's motor vehicle control program. Thus, current air quality levels in Sacramento make it clear that, given current population and land use development projections, no Metro Study alternative sufficiently reduces emissions. More complete analysis of air quality impacts of changes in travel behavior and transportation systems will be possible using the Urban Airshed Model.

Recommendations:

1. **Region-wide air quality analysis of the transportation system recommended in this report, and other transportation alternatives to be determined by SACOG in updating its Regional Transportation Plan, should be conducted using the Urban Airshed Model to assess consistency with the requirements of the California and Federal Clean Air Acts. In the interim, analysis of the impacts of transportation alternatives on air pollutant emissions should be used.**
2. **SACOG should work with the air districts in the development of the 1992 Regional Transportation Plan to include an alternative that maximizes the reduction of air pollution emissions in order to meet the transportation-related requirements of the California and Federal Clean Air Acts.**
3. **In addition to Alternative Six, the projects included in Alternative One and the Demonstration Alternative should be used as a basis for further analysis as part of the air quality planning process, as should an alternative that maximizes reductions of air pollution emissions.**



TRANSPORTATION CONTROL MEASURES

Reducing the peak-period trips by 15 percent greatly contributed to the reduction in VMT and Vehicle Hours of Delay. Developing and implementing TCMs that would make such a reduction would require significant time and money. Measures necessary to make such a reduction may also be unpopular and difficult to enforce.

Recommendations:

- 1. Significant policy changes and development of an extensive program of transportation control measures, including, but not necessarily limited to, those measures identified in Phase I of the Air Quality Plan update should occur in order to make such reductions in congestion and improvements in air quality.**
- 2. Local jurisdictions and Caltrans should participate in SACOG's HOV (high-occupancy vehicle) system study and should incorporate the findings of the HOV system study in their appropriate plans. The study should be expedited to ensure that projects are able to be included in the 1990 State Transportation Improvement Program.**



Mixed uses come in a variety of shapes and sizes



COORDINATION OF LAND USE AND TRANSPORTATION PLANNING

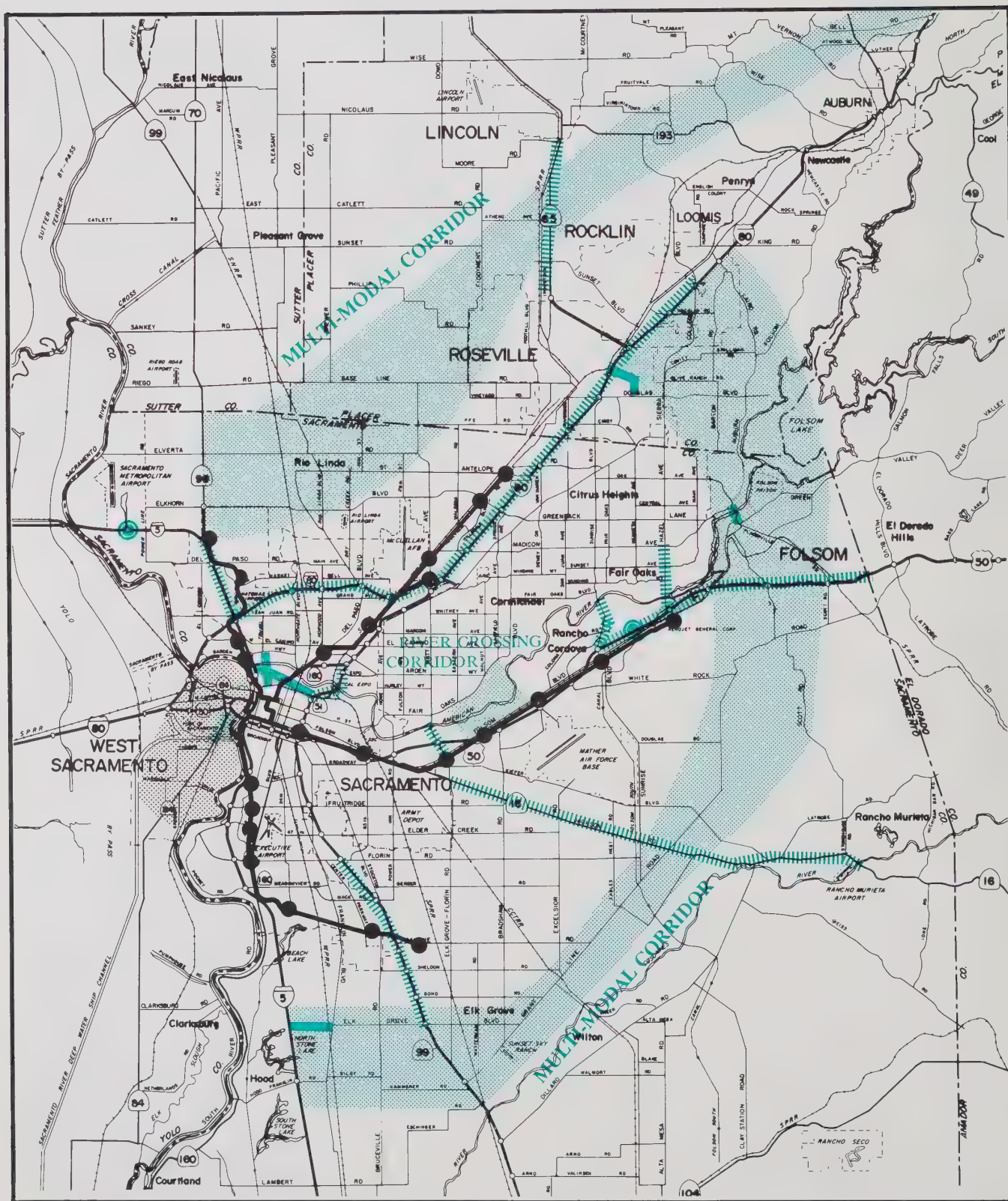
Given the existing land use projections, no Metro Study alternative succeeded in completely alleviating the projected traffic congestion. Congestion can be mitigated by reducing vehicle travel demand, or developing a system to meet a given demand. Alternative land uses, if implemented on a large scale throughout the Metro area, can significantly reduce travel demand. Land use plans designed to minimize vehicle travel demand should be developed in coordination with new roadway or transit facility development.

Recommendations:

1. **Cities and counties should amend general plans to include mixed-use development (i.e. land use development of various densities and at various sizes such as pedestrian pockets and other similar land use concepts) along planned and existing transportation corridors in order to help reduce travel demand. Higher density housing--to the extent it is desired in each community--should be within walking distance of light rail stations or major bus lines. Even in the absence of convenient transit, however, mixed uses and higher densities tend to reduce travel demand and should be emphasized accordingly.**
2. **SACOG should provide a forum for the coordination of transportation evaluation of local general plans in an effort to reduce region-wide travel demand.**

Figure 5

PROJECTS RECOMMENDED TO BE ADVANCED TO NEXT STAGE OF REVIEW



NEW FACILITIES

FREWAY, HIGHWAY, RIVERCROSSING WIDENINGS

INTERCHANGES

LIGHT RAIL ROUTE

BUS/LRT STATION

LRT CORRIDOR EXTENSION

YEAR 2010 FACILITIES NEEDS

Identification of transportation facilities needed to accommodate traffic projected for the year 2010 is based strictly on travel demand and amount of congestion relieved.

Given the existing general plans and land use projections, the combination of roadway and transit projects included in Alternative Six provides the greatest amount of system-wide relief. Alternative Six combines transit extensions, transportation control measures (TCMs), and both Route 102 and Route 65/148. Vehicle miles traveled (VMT) decreases approximately 8.5 percent from the 2010 Base, four times the percent of decrease in Alternatives Two through Five. Alternative Six provides the greatest relief in vehicle hours of delay and lane miles of severe congestion. Additionally, it provides reduced traffic volumes on significant sections of the system.

Recommendation:

The projects included in Alternative Six should be advanced to the next appropriate stage of project review and development with the stipulations below applied to new facilities. The corridors between South Placer, Folsom, and Elk Grove and between Auburn and the Metro Airport, and all other new projects or facilities should be planned as multi-modal corridors (or projects) and designed to maximize transit use, carpooling, walking, and bicycling. The debate over the timing of construction, the appropriate mix of modes of travel, and other design features should continue, but in order to avoid precluding future options it is critical that the necessary transportation corridors be recognized, identified, and protected soon. Cities and counties should commit to protecting rights-of-way for transit, bicycle, and road facilities in these corridors. Although all modes could be accommodated within the same right-of-way, they could also be developed in separate rights-of-way.

Recognizing that the Sacramento area is not attaining federal or state air quality standards, transit and non-motorized transportation facilities and implementation of TCMs should be given the highest priority. This does not imply that important road and bridge projects should be withheld pending completion of all transit recommendations, but it does mean that if the transportation benefits and the costs of competing road and transit projects are similar, the priority should go to the transit project.



TRANSIT

The Metro Study analyzed two transit alternatives. The most extensive of these, even when combined with significant roadway improvements, did not completely alleviate roadway congestion projected in 2010.

Recommendation:

A region-wide study should be conducted to determine the level of mass transit that would be needed to serve the currently-projected travel demand with level of service results similar to those achieved in Alternative Six.



CONTINUING STUDY

Transportation and air quality planning and land use development are dynamic processes that benefit from ongoing coordination. There are several special studies and general plan updates underway that may result in travel demand changes and in identification of alternative methods of relieving congestion. The development of SACOG's travel demand model and the opportunity for Metro area public works and planning staffs and elected officials to work together are, in themselves, positive outcomes of the Metro Study.

Recommendation:

The transportation needs of the region should be reassessed on an ongoing basis with the technical support of local public works and planning officials. The review should take into account:

- general plan updates
- route feasibility studies
- results of Regional Transit's System Planning Study which is evaluating light rail extensions to Roseville, Folsom, and Davis, in addition to those extensions recommended here
- results of the Hannigan Rail Study, which is evaluating passenger rail improvements between Auburn and San Jose
- other transportation studies
- refined analysis of the costs and benefits of the transportation systems represented in Alternatives One and Six and the Demonstration Alternative
- development of transportation facilities
- implementation of transportation services
- adoption and implementation of transportation control measures by cities and counties
- analysis of the costs and benefits of transportation projects and systems
- results of urban airshed modeling of alternatives
- air quality plans.

Upon completion of urban airshed modeling and analysis of costs and benefits of alternatives, SACOG should reconvene the Metro Study Policy and Technical Advisory Committees to consider further recommendations for inclusion of projects in the Regional Transportation Plan, general plans, transit plans, community plans or Caltrans plans.





MOBILITY
COMMUNITY IDENTITY. . .
CLEAN AIR

The linking of these three elements
is vital to the future quality of
life in the Sacramento Region

